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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/517,144	12/07/2004	Yoshitaka Shibamoto	DK-US045254	6839
22919	7590	09/09/2005	EXAMINER	
SHINJYU GLOBAL IP COUNSELORS, LLP 1233 20TH STREET, NW, SUITE 700 WASHINGTON, DC 20036-2680			MCCRAW, BARRY CLAYTON	
			ART UNIT	PAPER NUMBER
			3744	

DATE MAILED: 09/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/517,144

Applicant(s)

SHIBAMOTO ET AL.

Examiner

B. Clayton McCraw

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/07/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
3. The following title is suggested: Discharge Valve Mechanism For Variable Displacement Compressor.
4. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

The abstract of the disclosure is objected to because it refers to purported merits or speculative applications of the invention (see lines 8-9). Correction is required.

Claim Objections

5. Claim 6 is objected to because of the following informalities: The recitation "said valve elementcorresponding" is presumed to be --said valve element corresponding--. Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 1, lines 6-7 and

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claim 4, line 6 recite the broad recitation "a plate-like valve element," and the claims also recite "which is a reed valve," which is the narrower statement of the range/limitation. Similarly, claim 4, line 8 recites the broad recitation "a second valve element," and the claim also recites "which is a poppet valve," which is the narrower statement of the range/limitation. Appropriate correction is required.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 1-3, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nation et al. (US 6,116,874) in view of Tomita et al. (US 6,116,866). Nation et al. teach a compressor (see Figure 1) comprising a compression mechanism (4 and 5) and drive mechanism (col.1, lines 61-65) including a valve mechanism (8 and 9) and a

plurality of discharge openings with locations between base end side and leading end side of valve element (see Figure 3). Nation et al. do not teach multiple valve elements of varying bending strengths. Tomita et al. teach multiple valve elements of varying materials or thicknesses, achieving varying bending strengths (col. 3, lines 40-41 and 47-52). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine a compressor with compression, drive, and discharge valve mechanisms with a plurality of discharge openings with locations between the base end side and leading end side of the valve element as taught by Nation et al. with reeds of various thicknesses or materials as taught by Tomita et al., as a variation of bending strengths would take place, providing varying reed behavior under varying fluid pressures.

11. It should be noted that varying the width of a cantilever beam provides the same variation in bending strength as varying material or thickness as taught by Tomita et al., thus reading on the teachings in claims 2 and 3.

12. Claims 4-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nation et al. in view of Tomita et al. as applied to claims 1-3, 9 and 10 above, and further in view of Riffe (US 5,346,373). Nation et al. as modified by Tomita et al., do not explicitly teach a poppet valve in combination with a reed valve for the discharge valve in the variable displacement compressor. Riffe teaches a compressor utilizing a poppet valve (68) with a reed valve as the discharge valve. It would have been obvious to one skilled in the art at the time the invention was made to utilize poppet valves along with reed valves, as taught by Riffe, in the discharge valve of the compressor taught by

Nation et al. as modified by Tomita et al. because they advantageously provide the same function and are readily available to use in discharge valve applications.

13. It should be noted that variation of discharge port diameter and lift amount is synonymous with varying width and thickness of a reed valve and provides identical results; therefore, one of ordinary skill in the art at the time the invention was made would have been able to arrive at the cited dimensions and shapes without undue experimentation.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Boyesen (US 5,243,934) teaches multiple stage reed valves; Bergeron (US 5,143,027) teaches reed valves with a plurality of discharge openings; Kato et al. (US 6,290,468 B1) teach a variable displacement compressor utilizing reed valves; Kuroshita et al. (US 2001/0032676 A1) teach a reed valve with a plurality of discharge openings with locations between the base end side and leading end side of the valve element; Doeg (US 2,372,938) teaches a refrigerant compressor with a plurality of outlet ports covered by a single plate valve; Kimura et al. (US 6,474,957 B2) teach a compressor with valve plates of varying widths; and Gies et al. (US 5,355,910) teach a flap valve comprising multiple elements of soft and rigid layers.


15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to B. Clayton McCraw whose telephone number is (571) 272-3665. The examiner can normally be reached on M-F 8:30AM-5:00PM.

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16. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on (571) 272-4834. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

17. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BCM
8/23/2005


CHERYL TYLER
SUPERVISORY PATENT EXAMINER